

## ABSTRACT OF THE DISCLOSURE

A process is disclosed for preparing a C<sub>4</sub> stream for feeding to an alkylation process which reacts isobutane with butene to produce isooctane. The C<sub>4</sub> stream is treated in a first distillation column reactor to remove dienes and mercaptans and separate out any C<sub>5</sub>'s which might be present. The treated C<sub>4</sub>'s are then fed to a second distillation column reactor that concurrently isomerizes 1-butene to 2-butene and splits the normal C<sub>4</sub>'s from the iso C<sub>4</sub>'s. The iso C<sub>4</sub>'s are then fed to a third distillation column reactor where a portion of the isobutene is saturated to isobutane. The C<sub>4</sub>'s from the isomerization/splitter are combined with the C<sub>4</sub>'s from the hydrogenation unit and fed to a cold acid alkylation unit. The third distillation column may also oligomerize a portion of the isobutene to diisobutene in the upper end which is saturated in the bottom of the column to isooctane.

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